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United States Department of Agriculture.

FOREST SERVICE—Circular 60.

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FOREST PLANTING LEAFLET.

RED PINE (*Pinus resinosa*).

FORM AND SIZE.

The red, or Norway, pine generally attains a height of between 70 and 90 feet, and a diameter of 2 or rarely 3 feet. When grown in the open, the tree is relatively short, and branched close to the ground. In the forest the stem is commonly clear for 40 to 60 feet, and the crown is short and open, but broad-spreading.

The distinguishing features of red pine are its thin, scaly, reddish-brown bark, and its slender and flexible leaves 5 to 6 inches long in clusters of two.

RANGE.

The natural range of the red pine is along the northern border of the United States as far west as Minnesota, and southward through the Northern States to eastern Massachusetts, the mountains of Pennsylvania and northeastern Ohio. It reaches its best development in the northern portion of Michigan, Wisconsin, and Minnesota.

The red pine is adapted for planting throughout most of the northeastern part of the United States. It will not do well where droughts are frequent or severe.

SILVICAL QUALITIES.

The red pine grows best on sandy loam soil, well drained and of moderate fertility, but it also thrives on poor sands when other conditions are favorable. The tree is very intolerant of shade at all ages and therefore suitable for pure plantations only, or for mixtures in which the other species are distinctly slower growing. Its rate of growth is fairly rapid. Measurements made in several New England plantations show an average height of 35 feet and diameter of 6 inches at 30 years of age.

Red pine suffers little from insects or disease. It is moderately fire-resistant and quite free from destructive fungi. When young, the tree is sometimes injured by a white grub which feeds on the tender roots, but the mature tree has few enemies.

ECONOMIC USES.

The wood is somewhat like white pine, though a little heavier, harder, and stronger. It is only moderately durable. It is distinctly valuable for all kinds of house lumber, and when chemically treated makes good posts and ties. In most of its qualities it compares with the shortleaf pine of the South, and with western yellow pine.

PROPAGATION.

Red pine grows only from seed. While the trees do not produce large quantities of seed, and seed years occur at intervals of from two to four years, there is usually a sufficient natural reproduction wherever there are old trees.

The seeds ripen in the fall of the second year after the flowers appear and may then be gathered and kept over winter in any cool, dry place.

The seeds should be planted in the spring in well-prepared beds, either in drills about 5 inches apart extending across the beds, or broadcast, and covered lightly with earth well pulverized and pressed down firmly. When the seedlings are 2 years old they may be transplanted to nursery rows, or set in their permanent places in the plantation.

It is desirable to keep the nursery beds moderately moist, for if too dry the plants will either die or send their roots so deep in search of water that they will be difficult to transplant.

One pound of seed contains about 75,000 grains, and, under average conditions, will plant about 400 linear feet in drills, or 100 square feet broadcast.

The young seedling develops a strong taproot, but later produces several stout laterals which firmly anchor the mature tree, unless the soil be very shallow.

PLANTING.

For planting red pine it is best to use seedlings 2 or 3 years old which have been raised in nursery beds.

The young trees should be set out in the spring, late in April or early in May. They may be planted in furrows or in holes made with a spade, mattock, or planting bar. As a rule, the proper spacing is 4 feet each way, although this will vary in different localities.

It is usually advisable to plant red pine pure, though on good soil sugar maple, beech, or elm might be mixed with it. Any associate must be of slower growth than the red pine, or the latter will be over-topped and suppressed. Mixture with white pine has generally proved satisfactory.

CULTIVATION AND CARE.

If red pine is planted on cut-over lands, more rapid-growing species, such as jack pine, aspen, and birch, must be prevented from choking it out. No cultivation is needed, and the protection necessary is from fire and grazing.

The red pine, being intolerant of shade, very readily clears itself of its lower branches when close grown, and never requires pruning.

EXAMPLES.

Several plantations of red pine have been made in New England, where this species makes more rapid growth than the planted white pine, since it is not affected by the prevalent white pine weevil.

A most instructive example of a successful red pine plantation is found near Lake Winnepeaukee, New Hampshire, where it was planted pure and also in mixture with white pine, about thirty years ago. Measurements made in 27-year old stand of these two species show that the red pine has an average height of 34.9 feet and is taller than the white pine.

Approved.

JAMES WILSON,

Secretary.

WASHINGTON, D. C., November 24, 1906.

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